—吳金濱 · 黃順爵 · 謝明村—

百合科蓯白屬中草藥之有效成分定量研究

本實驗首先完成百合科蓯白屬(Allium屬)各種植物之形態，藥理，成份等考察，並進行有效成份之合成，純化，利用合成的標準品以高效液相層析(HPLC)法進行各植物中所含成份之定量，合成所得allicin及ajoene做爲指標成份，利用高效液相層析儀在各種條件下進行檢討，獲致結果如下：

裝置：島津LC-6A two pump.
紫外線檢出器：島津Spd-6A
資料處理機：島津C-R6A
層析管柱：Merck RP-8(cat. 50832) 5 μm. ID:4.0 × 250mm
操作溫度：室溫
流速：1毫升／分
移動相：氯甲烷：水：甲醇 =50:41:9

ajoene於上述移動相之滯留時間爲4.7分鐘，經檢量線校正時，濃度於16.4 μg/ml至 65.6 μg/ml 的校正值 r=0.9999395938。

結果與討論

本實驗探討百合科蓯白屬(Allium屬)植物之有效成分定量，由於標準品之不安定性質，必須定量前合成，純化；所用檢品也需於檢測前新鮮配製，再依經時變化加以討論結果如下：

Allicin：大蒜中所含此成份的經時變化，第一天0.166%，第二天0.133%

→0.092%，第三天0.058%→0.049%，第四天0.036%→0.034%，第五天0.017%蒜白自第一天0.164%，第二天0.09%→0.07%，第三天0.044%→0.037%，第四天0.025%→0.024%，蒜鬚由第一天0.026%，第二天0.019%→0.016%，新鮮洋蔥及蔥，薤白的檢品中僅含微量的allicin　Ajoene；蒜頭的新鮮配製檢品中，第一天含微量，第二天由0.015%→0.017%，第三天0.017%，第四天0.018%→0.019%，第五天0.019%，第六天0.02%，第八天0.02%→0.022%，第九天0.021%，第十天降至0.017%，由數據顯示ajoene的變化於第六天達最高量，蒜白所含ajoene較高，由第二天的0.020%,第三天0.022%，第四天0.024%→0.025%，第五天0.026%，第六天0.026%，第八天0.025%→0.023%，第九天0.023%，第十天0.022%，由此可知蒜白的ajoene含量比蒜頭爲高，並且在第五天達最高含量。

洋蔥於新鮮配製檢品中含大量的ajoene(0.046%)，爲蒜白最高含量的兩倍，但於兩天以後即轉化爲其他化合物而不易檢測，其他蒜鬚、蔥、薤白只含微量，於經時變化中無法檢測出來。

以上實驗結果顯示，洋蔥之鮮品含高量ajoene，至於蔥、薤白所含成份於本實驗HPLC移動相溶媒系統中滯留時間爲1.4分時含有共同的吸收峰，此共同成分之定量，尚須進行大量抽取，純化，結構鑑定等步驟，有待進一步之檢討。

本文摘錄自行政院衛生署八十年度中藥研究計畫成果發表會

Quantitative determination of actived compounds in *Allium* genus (*Liliaceae*) by HPLC

Jin-Bin Wu , Shung-Chieh Huang , Ming-Tsuen Hsieh*

School of pharmacy, and *Institute of Chinese Pharmaceutical Sciences,
China Medical College, Taichung, Taiwan, R. O. C.

The work of this plan included research of plants,synthesis of compound,separation and purification compounds and quantitative determination of components (*Allium* genus) by HPLC.
Synthesis of allicin and ajoene as the standard compounds in HPLC. And the method of analysis which results and discussion as the followings:
Pump: Shimadzu LC-6A two pump UV-Vis detector: Shimadzu Spd-6AV
Data Processor: Shimadzu C-R3A Column: Merck RP-8 (cat.50832)5μm ID:40× 250mm
Operation temperature : room temperature Flow rate: 1ml/min
Mobile phase : Mthanol : water : Acetonitrile = 9 : 41 : 50
The retentation time of ajoene was at 4.7 minutes and the corrective value(r=0.9999395938) between 16.4μg/ml and 65.6μg/ml was corrected by corrective curuv.
Preparation of sample: fresh preparation before analysis

Result and Discussion:

Allicin:the component daily change in methanolic extract of each plants.

Allium satirum-the first day showed 0.166%,second day 0.133% to 0.092%,third day 0.058% to 0.049%,fourth day 0.036% to 0.034% and the fifth day showed 0.017%
Inmature garlic bulb-the first day showed 0.164%,second day 0.09% to 0.07%,third day 0.044% to 0.037% and fourth day 0.025% to 0.024%.
Garlic root-the first day showed 0.026% and second day 0.019% to 0.016%
Fresh *Allium Cepa*,*Allium fistulosum* and *Allium bakeri* showed a little of allicin.

Ajoene: the daily change of each plants : mature garlic bulb-the first day showed a little content, second day 0.015% to 0.017%,third day 0.017%,fourth day 0.018% to 0.019,fifth day 0.019%, sixth day 0.02%,eighth day 0.02% to 0.022,ninth day 0.021% and the tenth day decrease to 0.017%, It could be found that the six day was the maxium quantity.
Allium bakeri-the second day showed 0.020%,third day 0.022%,fourth day 0.024% to 0.025%,fifth day 0.026%,sixth day 0.026%,eighth day 0.025% to 0.023%,ninth day 0.023% and the tenth day 0.022%. From the above,It is showed that ajoene of *Allium bakeri* was more thane mature garlic bulb, and the maxium quantity of ajoene was at the fifth day.

The ajoene (0.046%) content of *Allium cepa* was twice than *Allium bakeri*.After second day,the ajoene of fresh *Allium cepa* was converted to other componds which was difficultly to detected. other plants contained a little and could not be detected.
From the above, it was showed that fresh *Allium cepa* contain larger ajoene.

The plants of the geneus contained one of commom component which has the UV-254 nm of absorption peak at retention time of 1.4 mimutes by the above mobile phase.It is necessary for more largely extraction,purification and deeply structure elucidation for the common component .